EMBER 19

Cost and Management

THE SOCIETY OF INDUSTRIAL & COST ACCOUNTANTS OF CANADA
INCORPORATED 1920

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CONTROL

We cannot control the changing markets, business cycles, political, social and economic forces, or mould them to suit our own special company needs.

Each of us can, however, put our own company in such tight business trim and control that we may quickly take full advantage of whatever situation develops.

As good managers this is the minimum expected of us.

Our day-in day-out job is assisting management in this critical appraisal and working with them in the following broad areas:—

Organization
Salary Evaluation
Plant and Office Layout
Marketing Costs
Incentives

Standard Costs and Budgetary Control
Paper Work Simplification
Production and Inventory Control
Control of Sales
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Christmas Message .

At Christmas we stand at the bridge between past and future. More than any other time, in its ancient and universal ritual, Christmas brings home to us a realization of the common history and the common destiny of mankind.

Though the past year has brought much strife and disagreement, many crises in the international scene and on the economic front, the future will only be won through tolerance and cooperation with our fellow man.

Our greatest achievements in the past were won through unity. The laws of Rome, the wealth of empire, the very spires of Christendom itself are lasting monuments to unity. In the unity of the heart that Christmas brings, let us seek a permanent solution to the troubles which beset us. True progress will only come when the minds and hearts of each of us have acknowledged the eternal validity of Christian principles, when love and fellowship have indeed become the constant tenets of our creed, when inner harmony paves the way for outward merging of our destinies.

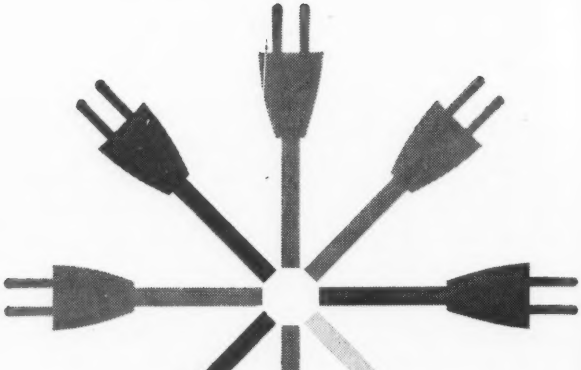
As a Society, we have demonstrated what the power of concerted effort and good will can accomplish. In a few short years, through the unstinting energies of our members, the free gift of their time and knowledge to their fellows, we have built our organization into a potent force for the betterment of industry, the advancement of our economic development and, ultimately, of our country and mankind.

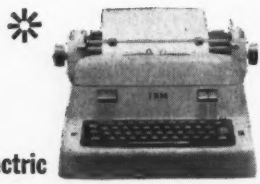
In the years ahead, in all our endeavours, let us keep the consciousness of our responsibility to others foremost in our thoughts. As others prosper, we prosper, for the fortunes of mankind always have and always will be interwoven. In unity there is strength, when unity comes from the heart.

As Christmas spreads its timeless message through the land, your officers and directors join me in wishing you and yours

A Merry Christmas and A Happy and Prosperous New Year

Thomas B. Milne, PRESIDENT





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SELL BUDGETS TO MANAGEMENT

By Edward Smith,
Controller, Landers, Frary & Clark,
New Britain, Conn.

The financial division, in many cases, has the job of selling budgets to management. This takes careful study and preparation as in any sales campaign. The pros and cons must be tallied and possible objections anticipated, a plan of action must be drawn up and finally, based on knowledge of the subject and the sales target, an effective sales presentation must be developed.

Approximately one third of industrial organizations have no budget program. What can be done about it? The election is yours, as you can take the action to enable your company to properly "CONTROL" "COORDINATE" AND "PLAN" every segment of the company's operation.

It is your responsibility to yourself, to your immediate supervisor, to the officers of your company, its Board of Directors, and its stockholders to develop and sell a budget program to management. By making this sale you will certainly put more money in your company's treasury, and also your own.

You have this responsibility as you are the accountants, the controllers and the treasurers of your company. Holding these positions, you are certainly striving for constant improvement in the services you perform, and in the general management of your company.

Improvement of accounting services by the accountants is comparable to improvement of design by engineers, or improvement of manufacturing methods by production personnel. What would you think of a production division that did not investigate new methods and cost-saving ideas used by other companies, and present these ideas to management? Not very complimentary thoughts.

We expect these ideas to come from engineers and production, as well as from all other divisions of our company.

This does not exclude the accounting division. We have the *same* responsibility in our field as the other divisions, sales, engineering, production and advertising, have in theirs. We must accept this responsibility and aid our company in its growth.

Budgets and budgetary control *are not new ideas today;* they have been around for many years. *However,* in the last 10-15 years there has been much progress on the subject.

There have been many excellent books written exclusively on budgets. Articles have appeared in all types of business publications with great regularity. Many ex-

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cellent speakers have talked on budgets. There has been a tremendous amount of detail about budgets, with really good technical advice available to everyone.

The books, articles, and speeches have not gone unheard. Budgets have had a tremendous increase as a tool to aid management. Many of our best managed and most profitable companies are using budgets.

A questionnaire was sent to a majority of the companies in one highly industrialized area to determine the extent that procedures were being utilized by the companies in that area. The majority of the companies were, to varying degrees, using budgetary control as a method of "Controlling", "Coordinating" and "Planning" the activities of their company. However, approximately one third of the companies, both large and small, indicated that they are not using budgets within their organization. The survey reflected that the accounting personnel in these companies not using budgets, have an opportunity to aid their company and themselves by selling a budget program to their management.

The extent to which any company may experience the greatest values from budgetary procedures will be largely dependent upon the ABILITIES and the AGGRESSIVENESS of the accountant. It is the accountant, who must generate the enthusiasm to attain the ADVANTAGES that are available, and to justify and create a willingness to do the work involved. The accountant may have to do some handholding and supply most of the leadership, if effective budgeting of ANY KIND is to be realized.

In other words, he will have to "SELL BUDGETS to Management." It is this failure to "Sell Budgets" that is the prime reason that all companies do not have budget programs. The importance of a budget is well realized by all accountants, but not all are able to develop enough "Salesmanship" to sell its application in his organization.

One customarily thinks of salesmanship or selling, as a function of the distribution of goods, but the principles of selling are exercised in many fields of endeavor. The preacher who delivers an exhortation to his congregation, the lawyer who pleads his case before the bar, the physician, the writer, the accountant and the politician seeking votes for himself or others, all practise the principles of selling.

Salesmanship is the skill or art of presentation of goods or ideas, so as to convert neutral or even negative attitudes towards the goods or ideas into a positive want or demand. Salesmanship is the plus factor that is needed by the accountant to introduce to his management a new idea or method, or a further development of a program, such as budgets.

Selling, whether it is creative selling of a budget program to management, or service type selling of a refrigerator, requires preparation.

Let us assume that we represent the ABC Manufacturing Company. This company does not have a budget program. We, as the company accountants, *fully believe* that budget procedures are very much needed in our organization. Our problem would be to sell our management on the program. This is one of the most difficult problems to overcome, but we shall attempt to solve it by the use of salesmanship.

In preparing ourselves for this sale, there are four basic steps which we must take.

1—An analysis of expected accomplishments, and work to be done
2—Complete knowledge of product—budgets
3—Knowledge of market—management
4—Prepare and train for the presentation

Let us follow these steps in the development of our effort to sell the management of the ABC Manufacturing Company on the adoption of a budget program.

ANALYZING WORK TO BE DONE AND ACCOMPLISHED

What we are attempting to accomplish in our budget program can best be understood by realizing the advantages of budgets. Let us look at some of them:

(a) Ensure Planned Operations

The very process of preparing a budget requires the development of a plan of operation for the budget period. For a comprehensive budget the plan will cover almost all the operations of the company and, if properly put together, will clearly show management the progress expected in the future.

(b) Provide Coordination

By budgeting all aspects of a company's operations and then summarizing management can see whether anticipated operations will be well coordinated. If it finds they will not, it can adjust the plans and budgets so that coordination will be achieved to arrive at the desired goal.

(c) Control Operations and Measure Performance

By planning and approving operations in advance, management can control them through the budget by increasing or decreasing the approved amounts. When the operations have been completed, the comparison of actual versus budget will measure performance of the various managers and supervisors in carrying out the approved plan expressed by the budget.

(d) Analyze Poor Performance

When actual performance is compared with the Budget, management can tell where the company failed to meet planned operations. The budget will spotlight the conditions that brought about the failure, and management can then focus its attention on correcting them.

(e) Reduce Costs

This benefit is the one most commonly thought of in connection with budgeting. Although it is important, it is probably less so than that of achieving coordination and control. However, by means of careful budgeting, costs and expenses can be reduced. Since they are considered at the time the budgt is prepared and are highlighted by the budget results, plans can be made to reduce them whenever they seem to be out of line.

Furthermore, the very process of preparing a budget tends to make an organization cost-conscious. This consciousness almost always leads to the elimination of unnecessary costs or to cost reductions.

(f) Allow Freedom of Action

Since a supervisor can act within the limits of the approved budget, he is freed of time-consuming requests for approval of minor and detailed actions. By the same token, less top-management time is taken for unimportant decisions because executives do not have to consider each request individually.

(*g*) *Evidence of A Well-Run Business*

This is one of the intangible advantages of a budget. The very fact that a company has a budgetary plan and operates within it is evidence to outsiders of a well-run business. This is particularly important in dealings with banks and other financial institutions.

OBJECTIONS

Almost all advocates of budgetary control discuss its advantages, but seldom do they mention disadvantages. Yet in the minds of many managements the disadvantages are of such importance that they preclude the use of budgets. It is safe to say, however, that the advantages of a well-run budget program will almost always greatly outweigh any potential drawback. Preparing for our sale of budgets to ABC management, we want to know these objections and how to successfully challenge and overcome them. Generally, the objections arise because either the budget plan is poor or budgeting is not completely understood. These objections are:

(*a*) *Complexity*

Budgets are frequently criticized because they are complex. This is a justifiable comment on many budget plans that have been evolved in the past. Accountants have frequently been carried away by their desire to cover all phases of an operation with a "Scientific" budget. The approach should be to follow the simplest techniques commensurate with the end results desired. There is no denying the fact, however, that complexity may develop in a large company having many and diversified products and operating plants. But such circumstances only tend to emphasize the need for a budgetary control program designed to bring the diversified operations under better control and coordination.

(*b*) *Cost of Operation*

Some companies do not use budgets because they feel that the cost of operation is excessive. Although there are no standard figures on what a budget should cost, it is obvious that some cost will be incurred in setting up and operating the plan. That this cost can be regained several times over by a good budget plan has been clearly demonstrated in many situations.

(*c*) *Time Required of Executives*

Budgets are sometimes objected to because of the time executives must take in preparing or reviewing them. Obviously, some time must be spent in working on the budget if it is to be of value. The amount of time, however, can be held to a minimum if the period of the budget is well selected; if forms, reports, and procedures are well planned; and if all supervisors and executives thoroughly understand the over-all plan. Actually, a good budget plan saves executive time because a little time spent "in order" will save a great deal of time spent "in confusion".

(*d*) *Difficulty of Making Forecasts or Budgets*

One of the most common complaints of executives is that it is impossible "in their particular business" to make reasonable sales forecasts or expense budgets because

of the "special nature" of the business. It is undoubtedly difficult for an executive to start from scratch in making these estimates. In almost all cases, however, we find that companies are making informal estimates as a matter of course. The introduction of a budgetary plan merely formalizes those estimates and provides refinements that contribute to the accuracy of them. Furthermore, as companies gain experience with the budgetary program, the accuracy of their estimates will normally improve.

The possibility that forecasts may be wrong always exists in budget work; however, there is nothing static about the original forecasts or budgets. If the factors upon which it was based have changed materially, the forecast or budget should be changed.

(e) Regimentation

In some cases department heads or supervisors object to budgets on the grounds that they too closely restrict their managerial talent. They feel that the establishment of a budget puts a check on their ability to run their operation properly.

This objection can be met by showing the supervisors how they can improve their performance by using the budget as a basis for important management decisions. If necessary, the top management of the company may have to indicate clearly that a budget program is to be used in the company and that performance will be measured by it. Obviously, management must be thoroughly sold on the plan if they hope to make it work.

OBSTACLES

With this knowledge of the pros and cons of budgetary control and thus an understanding of what we aim to accomplish by "Selling Budgets to Management", we should be further prepared for the sale by a realization of the obstacles that will present themselves in the operation of the program. Some of the more important of these problems are:

1. Lack of Management Interest

Even after the sale is made, the need for maintaining the interest (keeping the backing) of the chief executives is most important. One method is to develop a broad program without too much detail, for the benefit of the top management group. This would show what can be accomplished by budgets. Another solution would be to emphasize budgets in areas of special interest to the chief executive.

2. Lack of Time for Development of Program

It requires time to develop budgeting skill, not only in the accounting division, but in all other divisions. Since this could require years, a solution would be to develop the budget technical skills in accounting only at first, and develop a knowledge of budgets in other executive personnel.

3. Lack of Statistical Information

Statistical information such as normal volume, variably of expenses, departmental budget bases, are major jobs in installing budgets. To simplify the problem, hold to a minimum the statistics, accumulate only those absolutely essential—others can be developed as the program progresses.

4. Lack of Standards of Operations and Costs

If a budget is to serve as a tool of control, standards of performance must be established. Since many years' effort are required to fully develop standards, it is well to recognize that, while such standards are being developed, it is possible to proceed with the budget program for planning and coordinating purposes.

PLAN OF ACTION

The next step in our analysis of the work to be done, would be to determine our "PLAN OF ACTION" for the development of the budget.

There are two directions that such a plan could take. Either we could install the budget in one or a few selected departments or segments of the company, or we could start on a very broad installation, but limit the budget objectives.

An example of the first plan would be to establish budgets only for Manufacturing Expense and Capital Budgets, to control and measure performance in just those areas. This would permit concentration and development quickly of detail and accuracy in those areas. Many companies have adopted this approach in developing a budget program.

The broad installation would be based on a forecast of sales and would consider inventories, manufacturing costs and purchases, ending up with a predicted profit and loss statement for the future period, as well as a balance sheet forecast. This would be done with a minimum of detail. This limit on detail is necessary since it would be physically impossible to attempt complete detail coverage of the company and still make the budget effective in "Planning, Coordination and Control". This type of installation would yield a two-fold benefit; first—by influencing "big money" decisions; second—by acquainting the top management level with the advantages of budgeting and enlisting their aid and support in the development of the budget program as it affected successively lower levels of management.

The extent to which budgeting can be made effective will be limited greatly by the facilities of the budgetor. Budgeting can be undertaken by degrees, no matter which type of program is selected, and enlarged from time to time as facilities and data are established, with the ultimate aim being a budget to cover all operations of the business in detail.

PREPARATION FOR BUDGETS

Before budgets can be installed, some necessary background in the accounting department must be undertaken.
Some of these are:

1. Classification of Accounts

Budgetary control demands for its smooth operation the preparation of a chart of accounts that will provide:

a. Ready preparation of all reports
b. Expense segregation by type of expense
c. Expense segregation by responsibility

2. Departmentalization

Departments should be established in all divisions of the company: Sales, Manufacturing, Engineering, Administration, etc.

3. REVIEW OF ACCOUNTING SYSTEM

To alter where necessary so that it could be used for budget purposes.

4. PREPARATION OF HISTORICAL STATISTICAL INFORMATION

Specifically for budget purposes.

5. SELECTING THE BUDGET MAN

We should also understand that in selecting a man to direct the budget program, we must choose a man who possesses sufficient knowledge of every phase of business activity from purchasing through production and selling to temper the projections of those unfamiliar with planning.

KNOWLEDGE OF PRODUCT—BUDGETS

In our preparation to "Sell Budgets to ABC Management" the second step we must take, is to obtain a detailed knowledge of budgets and how they work. The large number of books and published articles on the subject of budgets can furnish excellent information on the detailed operations of the many different kinds of budgets that make up a complete budget control program. These budgets run from Sales Budget through a Profit and Loss and Balance Sheet Budgets.

Let us look at a few points in the operations of budgets.

1. Makes for Thoughts of Future

In the annual budget "ordeal" as it is called by some, the budget becomes a very important instrument of management in helping to form judgments and decisions. Also, the very act of preparing budgets means that the division managers, department heads, and other supervisors must devote time from their day-to-day duties to take stock of the present situation in their departments and take a thought of the future. This is a valuable asset to the company.

2. Participation and Responsibility

In nearly all business, regardless of size, no one should know more about any particular segment of the business operations than the person in charge of that segment. So, in developing a budget, all management levels will participate. Each in effect will establish his own budget and will thus be responsible for following his own plan. When changes of these budgets are necessary, the changes should be explained and agreed to by the supervisor. In final analysis, responsibility for a successful budget program rests with all department heads and supervisors.

3. Follow-up

The effectiveness of budgeting control depends to a considerable degree on the procedures followed subsequent to the issuance of budget reports. Many budget programs have found that formal written explanations of unfavorable variances are not effective nor worth the time involved. Accordingly, the follow-up is on an in-

formal basis. Informal conferences at all levels of supervision should be held. This procedure will result in good relations and development of confidence between the operating supervisors and the budget department. Moreover, through these informal conferences, many suggestions and ideas for improvement of the budget program and the operations of the company will result.

4. Budget Revisions

Budget revision is another administrative detail in operating a budget. It is very important that revisions be made when conditions change. The revisions must be controlled so that neither the accountant nor operating supervisor can have free range to change the budget.

5. Reflection of Policies

The budget should reflect, rather than dictate, the policies of management, for it is nothing more than an instrument, a tool, to be used by management in planning, coordinating, and controlling operations.

6. Others

Other administrative phases of budgets, to mention some, are:

Fixed Charges
Variable Costs
Forecasting
Break Even Charts
Controllable and Non-controllable Expenses
Budget Committee
Annual Review

All of these administrative details must be clearly understood by the accountant prior to the selling of budgets to management.

KNOWLEDGE OF MARKET—MANAGEMENT

Prior to making any sale, the salesman will obtain as much information about his market as he can. The accountant is fortunate in that he has a wonderful opportunity to really study his market—the top management group, particularly the chief executive.

Facts about the president, his personality, his hobbies are obtainable and should be known. What are the president's wants or needs that can relate to budgets? Is it cost reduction, coordination, inventory control, financial planning?

What kind of objections will he raise—is it generally the extra cost? Does he belittle forecasting and planning? Does he believe in planning? Is he eager for improvements, or does he tend to coast?

All information of this type about your management will aid you in determining the best way to make the sale.

PREPARING AND TRAINING FOR SALES PRESENTATION

Now comes the final step prior to the sale—preparing and training for the sales presentation. The success or failure of the sale will depend to a large extent on the

presentation, since now we shall attempt to convert the chief executive's attitude towards a budget from a neutral one to one with a positive want or demand.

We must draw up the sales points so that they are convincing. We should emphasize "CONTROL, COORDINATION AND PLANNING". All essential points must be covered in the presentation, but we should not attempt to cover too much territory. The advantages of budgets should be clearly pin-pointed and we should be ready to reply to objections.

Those areas of special interest to the chief executive (it may be Manufacturing Expense or Capital Budgets), should be emphasized. Play up the points most likely to attract attention. One ex-chairman at a large company loved to fish. After a trip North he discovered the one fish he caught cost $472. No complaint, because he was interested in fishing. Your chief may be willing to buy budgets for a similar reason.

We can use examples within the company's operations to indicate where budgets can aid management by planning, coordinating and controlling.

We can demonstrate with budget forms and reports of companies with which the chief executive is familiar. The use of visual aids can be very helpful in the sale.

We should pick the correct time for the presentation. If he is a baseball fan we should pick a time when his team is winning.

There is considerable truth in the belief held by many sales executives that the first ten words of a presentation are the most important. Extreme care should be exerted in selecting the opening. It is the headline; it should catch attention, arouse interest, and pave the way for the details to follow. It is the punch line.

Examples may be "Would you like to know in December approximately how much profit you will make next year?" or "Would you be interested in securing a measuring stick for the performance of all your executive personnel?" Make your opening pave the way for your sale.

The sequence in our presentation should be well thought out and should end with a recommendation for a start in the development of a budget program within the company.

Having prepared ourselves by following the four basic steps of selling,

1. Analysis of expected Accomplishments and Work to be done
2. Complete knowledge of Product-Budgets
3. Knowledge of Market-Management
4. Prepare and train for the Presentation

our chances for a successful sale are much greater than if we did not attempt to use the art of salesmanship in "Selling Budgets to Management".

For further reading

AN APPROACH TO PRACTICAL BUDGETING, By John F. Rogge, The Controller, June 1958.

THE BUDGET AS A TOOL FOR OPERATING MANAGEMENT AND CONTROL, By J. Curran Freeman, N.A.C.A. Bulletin, Conference Proceedings, August 1956. Sec. 3.

HOW TO WIN FRIENDS AND INFLUENCE PEOPLE THROUGH BUDGETS, By N. R. Barfoot, Cost and Management, May 1953.

TOPICAL

comments *by N. R. Barfoot*

LOOKING AHEAD

More Business—Personal net savings in the first quarter of 1958 were $1.7 billion; second quarter $2.5 billion. This represents reduced time-payment debt and a slower pace of new time-payment contracts. Good products and good selling should start more activity in this field and improve business.

Electroluminescence will be available this year. This is a process that makes drapes, ceilings and wall panels light up.

Housing Starts will number 150,000, says the C.M.C.H. forecast. Among other things, it means a $200 million market for the heating and plumbing industry. Average cost per house—$1,350.

In marketing that new product, watch for patent and trademark troubles. An extremely complicated set of laws surrounds patents and trademarks. For example, is there a patent? Is there a patent pending? Is there a patent in the country to which you are exporting? If you are planning a U.S. patent, you will require the most painstaking research. The only safeguard is check, check and check again through your patent attorney.

ON THE PERSONAL SIDE

A recent American Cancer Society report says—

- Total death rate from all causes is 32% greater for tobacco users, but 58% greater for cigarette smokers.
- Lung cancer, the leading cause of cancer death in men, has increased 8 times in the last 20 years and is 10 times as high for cigarette smokers as non-smokers.
- Heart disease, particularly coronary, shows 63% higher for cigarette smokers than non-smokers.
- Respiratory diseases such as pneumonia, have a 61% higher rate for smokers over non-smokers.
- Ulcer frequency is 3 times higher among smokers.
- Cancer of mouth, throat and stomach are double the average rate where smokers are involved.

Obviously, such a report will be highly controversial among medical and research men, but there is no doubt that one can take a serious view of the existing evidence.

Canadian Banks will probably introduce wider participation in consumer installment

credit. Nothing could be more logical with the knowledge and mechanics already existent in the chartered bank system.

Asian flu will be with us again this winter. If you had it last winter, a certain amount of immunity will remain. Vaccine shots are available.

Floor gear levers will be an optional extra for next year in some cars, for those who want the fun of driving.

OF GENERAL INTEREST

Accounting as seen through the eyes of other functions—some quotes:

- Accounting should be the principal agency for achieving "control" or the feedback of reports on the operation of the group.
- An organization set up to conform to traditional accounting practices is not really organized.
- Accounting, despite electronic computers, is still on a high stool and wearing a green visor. It has kept pace with its own technology but not with that of other functions on which it is supposed to report.
- Accounting should stress internal uses and be available to all levels of supervision.
- Good accounting, of internal functions, will call attention to the real weaknesses of management better than any other form of report or control.
- A functional accounting system should require careful study of operating processes and so bring to light many soft spots.

How about this?

THE COST OF BORROWING—a recent tabulation of the effective current annual interest rates on various types of personal loans from different lending institutions shows—

- Bank loans based on chattel mortgages on home furnishings, cars etc. 10%-10½%
- Small loan company on chattel mortgage as above 16.7%
- Sales Finance Company auto loan 16.9%
- Insurance Company loan against life insurance 6%
- Conventional personal loan from any bank based on credit rating of individual 5.25%

Ownership change to the tune of $2 billion has taken place in Canadian companies since the war. A recent survey shows that 102 Canadian companies have changed from Canadian to foreign control.

Total foreign investment in 1945 was $7.1 billion, of which $5 billion was U. S. In 1957, the figures show $17.2 billion total foreign investment, of which $13 billion was U.S.

Purchase prices, particularly for single ownership companies, are usually quite good and the company's activities are generally broadened. Some casualties may occur at middle-management levels, since the foreign owner prefers to have his own men at this level, who are trained in reporting and evaluating in the way the "home office" likes.

Canada has always leaned heavily on foreign capital, but never more so than at present.

HOW TO INSURE USEFUL AND TIMELY REPORTS

By Leslie H. Matthies,
Editor of "SYSTEMATION"
Systems Manager, Hallamore Electronics,
Anaheim, California.

Just how useful are the majority of reports turned out by the hundreds in many companies? In one systems survey, it was found that only 10% of them were of any use to anybody. Besides the substantial cash savings elimination of surplus reports can produce, much confusion and inefficiency can be avoided by a well-organized reports control program. This article sets out the essentials of establishing an effective report system.

THE FIELD OF REPORTS IS NO MAN'S LAND. We have people who are concerned about forms and they set up a forms control program. We have people who are concerned about action paper and about systems and these people study our present ways of doing things and try to improve them. They are systems and procedures people. We have people concerned about accounting subjects such as payroll, accounts receivable, accounts payable, property accounting, and general accounting.

But who is responsible for reports? The answer is, that in most companies no one is responsible. Consequently, reports are floating all over and flooding most companies like a bunch of wild mavericks out on the range. Our office files bulge with reports and our archives are full of them.

One general manager went away for a three-week vacation and he told his secretary: "Have the vice president take care of the very vital things that can't wait, but put everything else here on my desk." When he returned from his vacation, he had two piles of material stacked on his desk. One of them was 23″ high and the other was 17″ high. He was aghast at the quantity of material that could accumulate over a period of only 15 working days. He hadn't realized how much of his time was spent each day in shuffling through this mass.

He shuffled through it daily because he was never sure of what was there. He had to sift all of the information, magazines from newspapers, and correspondence from

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A career systems manager since 1936, the author is the developer of such effective systems techniques as the functional inventory, the playscript procedure, and the self-instructing form. He has published more than 100 articles on systems and business administration and is editor and staff writer of the journal *Systemation*. A graduate of the University of California at Berkeley, he is a national director of the Systems and Procedures Association of America, a past president of the Los Angeles Systems and Procedures Chapter, and was General Chairman of the 1957 International Systems Meeting held at Los Angeles. He is Chief of Engineering Administrative Services for Hallamore Electronics.

advertising brochures. Interspersed with all of this were documents purported to be reports. It was clear that if he had been reading steadily the whole three weeks he could never have read all this material.

With the help of his secretary, he sorted out the two stacks. His attention focused on one stack of material that was about 3½" high. He had classified this as reports of various types, coming from within the plant.

SYSTEMS REPORTS OR SPECIAL REPORTS?

Before we get very far into the subject of reports, let's be sure of the area we are talking about. If the boss turns to his staff assistant and says, "Jim, our expenses are up 20% in our Indiana operation. Now you hop a plane over there and see if you can find out why. I would like to have a report on it by the 10th of the month", what he is asking for here is a special report. A special problem arises, a staff man makes a special study, and the results are conveyed to the boss in a report.

Oddly enough, most of the books that I read on how to improve reports or how to write a report are on these *special reports*. Most of these books are written by professors who would have no way of knowing, unless they are also consultants, that the really big problem is in the system, or routine report. It is in this field that the mavericks are prancing and refusing to be saddled or bridled.

EXECUTIVE'S TIME IS LIMITED

The American Management Association made a study of the reading habits of executives. They found that the executive does more reading each day than does the college student. He spends about five hours a day reading. Much of this reading must be done in the office. Four out of five of these executives say that some of the reading time is wasted. They blame wordy, unclear, poorly-organized material.

By contrast, the few executives who are receiving clearly-presented material found that this speeded their reading and seemed to be at least a part of the answer to the business man's headaches.

WHAT HAPPENS WHEN A COMPANY DECIDES TO DO SOMETHING?

It is the usual practice in most organizations to just let reports go. No one is responsible for *reports as a whole*. The general manager that we mentioned decided to accumulate another week's supply of reports to see how many actually came to him during a 30-day period. He had his secretary sort out all reports and keep them in a special stack. Some of these he had to glance at to get information for directing the plant operations.

At the end of the 30-day period, he counted 114 report *issues*. Of course, a report issued on a daily basis would be 23 issues. A report issued on a weekly basis would be four issues. This man decided that, out of the 114 report issues, he had use for only ten. This meant that he was receiving 104 more issues than he needed.

This question struck him. "Are many other plant executives as flooded as I am with these useless reports? I wonder how many reports we have in the plant? I wonder

how much time it takes to prepare them? How much do they cost? Who uses them? How many could we cut out?"

A REPORT STUDY LAUNCHED

This manager called in his systems man and asked him to study reports in each department. How many were received in that department and how many were sent out? What the boss wanted was a complete inventory of all reports issued or received on a repetitive basis.

The company was a medium-sized company with somewhat under 3,000 people on the payroll and did an annual sales volume of about $30 million. Its products were stock items. However, quality was very important and many of the reports were on quality subjects.

What did the systems man find? How many different reports did the plant issue internally? He found that 824 different repetitive reports were issued within a single month. The systems man measured the reports by issues. He felt that each issue would be indicative of at least one unit of preparation work. So while there were 824 different report *issues*, the plant people produced 475 *separate reports* on a repetitive basis. That is, all of these reports were routine and presumably would be turned out month-after-month, and year-after-year.

The systems man also counted all of the copies of all the reports for this 30-day period. They added up to 4,278. The average number of copies per report was nine.

The 4,278 copies were bad enough, but the systems man had not come to the end . . . yet. One of the reports was 32 pages. Another was 20, another 17. The average was six pages. The systems man multiplied this page average (6) by the number of copies (4,278). He found that the plant was turning out 25,668 pages of reports in a 30-day period.

COST FACTOR IN PRODUCING A REPORT

How much did they cost? The manager didn't feel that he wanted to spend months and months on this project, so he asked the systems man merely to sample a few of the reports . . . at random. The systems man selected five reports and studied them carefully to find out what they cost. He found that time was the biggest element of cost in producing reports.

To estimate the cost of the five reports, he considered the following jobs that would consume time in report preparation, issue, reproduction, distribution, and in their use:

1. Gathering the basic data.
2. Compiling the data on work sheets.
3. Posting or tab punching.
4. Transcribing from any one sheet to another.
5. Sorting.
6. Computing any of the figures or percentages.
7. Typing the data, or running the data on the tabulator.
8. Addressing the envelopes for distribution.
9. Proofing the final copy.

10. Reproducing the copies.
11. Art work for graphs or charts.
12. Handling the report in the internal mail system.
13. Reading the report to decide how valuable it was.
14. Filing the report.
15. Studying the report.
16. Destroying the report, or sending it to archives.

Of course, all of these cost factors did not apply in every case. However, the systems man did check each of these items in determining the cost of the report. He determined the time cost to the nearest hundredth of a minute, the usual time-study measurement. Then he multiplied the elapsed time for any cycle of the work by the pay rate of the employee doing the work. He next added 50% to cover burden costs and supplies, paper, etc.

For example, let's consider cost factor No. 7 . . . typing. In the case of one of the sample reports, he found that the typist averaged two hours to type it. At this time she was paid $1.50 per hour, so the report cost $3 in direct pay to the employee. The systems man added $1.50 to cover the burden and other expenses. Thus, as far as this one report was concerned, this single cost factor, out of a total of 16 possible cost factors . . . for typing this one report, and only one issue of it . . . was $4.50.

SAMPLE REPORTS INDICATED HIGH COSTS

The systems man's five sample reports cost $252 per issue for five, or an average cost of $50.45 per issue.

	Issues Per Mo.	*No. of Copies*	*Pages*	*Total Cost Per Issue*
REPORT #1 DAILY	23	14	2	$ 13.39
REPORT #2 WEEKLY	4	3	1	7.56
REPORT #3 WEEKLY	4	9	12	45.18
REPORT #4 MONTHLY	1	1	5	172.11
REPORT #5 MONTHLY	1	7	1	14.01
	34		21	$252.25
Average for the samples		6.8 *Copies*	4.2 *Pages*	$50.45 *Cost*

The systems man summarized his findings for the boss as follows:

"If the 475 reports (824 issues) that are turned out by this plant each month average out the same as the sample reports which I studied in detail, we can conclude that reports cost this company $23,963 per month. This is $287,565 for the year. This is slightly less than 1% of our sales volume.

"Reports take about 7,987 working hours a month. This comes to 94,844 hours in a year.

"This is the equivalent of a working force of 44 people working full time in this plant only on reports."

Perhaps some of these expenses could be justified if the reports were useful. Perhaps 1% of the sales volume isn't too much to pay for reports . . . *if* these reports are really helping the management to control the business. But are they really of any use? The systems man came to the rather staggering conclusion that most of them, possibly as high as 90% of them, were not useful!

STRANGE PHENOMENA OF THE WONDERLAND OF REPORTS

Most of the reports that were going to individuals were not used. Most of them led to no action. In many cases, they were going to people who couldn't possibly take any action on them one way or another, even if they were so inclined. The systems man found that only the originator himself really understood them. Some were plain, ancient history. They carried information that might have been of some use 60 days before. Now they were just history. Interesting, but that is all. The water had long since gone over the dam.

As the systems man talked to the various managers and supervisors, he found that they all made this assumption:

> "No, I don't use it. As a matter of fact, I don't even understand it. But I guess we ought to have it because some of the other fellows on the list undoubtedly understand it and find a use for it."

This proved to be an assumption without foundation. In one case the systems man found a 17-page report that was issued once a week. Yet, he could find no one on the list who wanted it! The only man who thought it was valuable was the man who prepared and issued it. The weekly cost of this report was $17.92 and it had been issued for 60 weeks. So the originator had spent to date $1,075 for something that was completely useless to everyone on his list. The systems man figured that a salesman would have to dig up extra sales of $23,000 to offset the expense of this one useless report.

HE NEEDS IT

Perhaps the strangest incident during the systems man's course of study came out when he talked to one supervisor who had a complaint: "Here is a report that I don't want but I can't get it shut off. I have repeatedly asked Jim Hall, the sender, to take me off the list. But every month I get that same report in the mail." The systems man went to Hall and asked him why he didn't take the supervisor off the list.

Hall said, "Why, he can't do without that information. I intend to keep on sending him that report. He needs that in his work!"

Other people who were creating reports felt that way. They would say, "How can anyone possibly do without this important information that I am providing?" Some other reports turned out to be what the systems man called "whitewash" reports. These were reports that told how rosy everything was in a given department or section. Not a mention was made of any problems or troubles. The systems man wondered what earthly good a report of this type could be to anyone.

But the creators of reports were not the only ones who were guilty of distributing useless paper. Some men were just nosy. They were afraid they might miss something. They wanted to know exactly what was happening all over the plant so they asked

to be put on several report lists. One man was on 23 different lists, and the systems man felt that in no case could he put this information to any use in his work. In such cases the sender, when requested to put a man on a list, could only assume that the man who asked for a copy found the report useful in his work.

Other men were actually like squirrels. They were receiving reports because they wanted to stock "information acorns" against that day in the future when they might need it.

GETTING RID OF REPORTS

The systems man wondered. What finally happened to all this paper that was being ground out month after month? Was it destroyed? Was it filed?

He discovered one weekly report that was sent to seven department managers. Every single copy from all seven departments went to the archives to be stored. Here was duplication seven times over, since the archives were set up on a departmental basis and each man stored what he wanted.

A vast group of other reports remained in current files, sometimes up to three years. In the meantime the company was forced to buy new filing cabinets, one after the other, at $80 apiece to provide the space.

The systems man visited one department where a daily report copy was kept in a binder. He talked to the girl who filed the reports. Behind her desk he found a shelf with 15 three-inch ring binders where three years' accumulation of the reports was stored. He found that the girl's boss had only asked for the information in these files once that she could remember.

MANAGEMENT'S RESPONSIBILITY

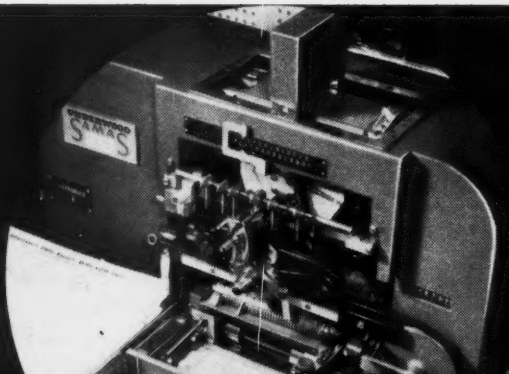
The systems man concluded that much of the responsibility for useless reporting could be laid at the door of management. Any uncontrolled activity that goes on in an organization, including any attempt at control, must be laid at the door of management.

The management group as a whole had not thought through their report requirements. They didn't think out what they needed to know in order to run their sections of the business, nor did they seem to know what their bosses needed.

But the big problem seemed to be this: *Who* is responsible for reports? Can anyone send a report to anyone he chooses? The answer was, in this organization, yes. Anyone could generate a report and send it to anyone he chose, including the general manager. Obviously, in such a situation we can only say that reports are out of control.

REPORTS CONTROL PROGRAM

So what do we do about it? We can usually do nothing until the top management people show concern about the problem. As long as the general manager, vice president and other men of this standing are satisfied and don't feel that there is much of a problem, the problem will remain.



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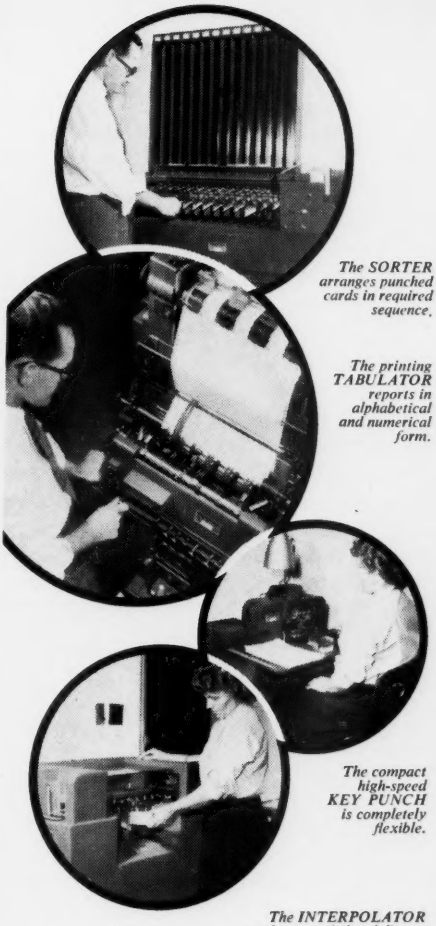

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It seems to take something like our case of the executive on vacation to get these men to realize how serious the reports control problem is. A man has to go away on a vacation and come back to find this appalling stack of papers staring him in the face.

A systems friend of mine, who is handling the systems program for a large industrial concern, is just now putting in a *reports control program*. Based on the experience gained from a similar job he did for another branch of the company, he expects to save the company $75,000 a year.

Mind you, this is just plain *cash* savings. This is only a secondary objective. His objectives are three, and they line up like this:

1. To develop reports that will be *useful*.
2. To *reduce the confusion* that now exists in the reports picture.
3. To *lower the cost* of reporting functions.

He is making his study similar to the case study we have just examined. Already he is finding similar problems. When his reports control program goes into effect, following this study, every report will be known, its use will be known, and its costs will be known. The people who are on the list will be known. Then he will move the mavericks into the corral.

And here is where we would like to caution anyone who is thinking of starting a reports control program. Don't go off on a reports control kick, and then three months later forget about it. You will be wasting your money. If you do so, the reports will get right back into the condition they were in when you first made your study. If you decide to go into a reports control program, do it on a sustained basis.

How do you sustain it? You put *someone in charge*. He continues to ride herd. No new reports can be issued without his approval. Each report is numbered. No one gets on the distribution list without checking first with him. Why? What does he do? He determines the need. He points out duplication and discourages useless reports and useless distribution.

If you decide to start a reports control program, the first job is the round-up. This way you will get the picture of what is now happening. And we can just about bet that you and your bosses will be appalled by the picture.

MAKE REPORTS A PART OF YOUR SYSTEMS PLAN

To do the right kind of a job on reports, they should become a part of your systems plan. A system has three facets to it. One of these is the *action* facet. In purchasing, for example, we get action by issuing a purchase order. This is the first part of any system . . . action. Ordinarily we get this action by issuing a duly authorized action paper, like the purchase order.

The second facet of a system is the *record*, or the memory of what we have done. Now a record doesn't get any action. A record can remain in a file, it can be in a visible index file, or it can be on a magnetic tape in a computer. But the function is essentially the same in any system.

The third phase of the system is the *report*. In our purchasing example, the report may not appear as a form at all. It may merely be a typed sheet that the purchasing agent wants such as a "report on purchases for Project No. 15."

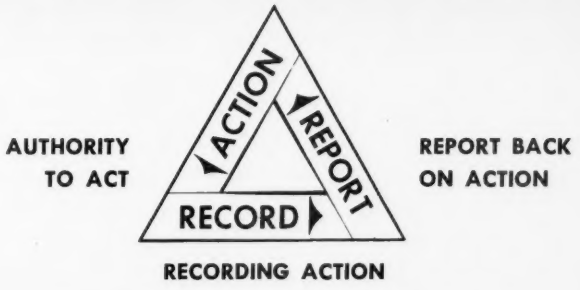

Figure 1 . . . THE BASIC SYSTEMS TRIANGLE

I believe that the electronic system boys have given us a good title for the report. They call it a "feedback". If you are familiar with electronic computers, the feedback is what makes the system really work. The feedback goes back to the thinking part of the machine and if the output of the machine isn't what it should be the thinking segment changes the output.

So a system that only provides for action paper and records is a lopsided system. It is only two-thirds of a system. We must also have reports and these reports should feed off of the system, and be a part of it.

All action that takes place in any organization is based on the system cycle.

Using purchasing again as an example, the purchasing cycle starts in the stock room. The stock clerk issues a requisition because the stock of the item she is ordering has reached the re-ordering point. The "req" goes to the purchasing agent who will consult various vendors. Notice the action that has taken place here.

The next step, in this action, is the placing of the purchase order. When the vendor delivers the goods, we issue a receiving report out on the dock. Then we can say the purchasing cycle is complete.

Working in this cycle we should have three things:

1. Authority to take *action.*
2. Memory or *record.*
3. *Reports.*

When you follow this concept for setting up your reports, you are naturally only going to send feedback (reports) to the thinking machinery. In most cases this is a boss. This may be the top boss, the middle boss, or the bottom boss. They all need systems reports.

One reason why we often overlook reports in our systems work is that they are produced in relatively small quantities when we compare them with records or action paper. We very seldom print reports. They are usually made up specially and will often be merely a typewritten document.

THE IMPORTANT POINT IS THIS:

Regardless of what form the report comes in . . . printed, typewritten, hand-scribbled, or if it is merely a copy of an action document, or a photograph of a record, or a telephone call . . . it's still a report, and should be considered as such in our system design.

In a small shop if the boss comes in in the morning and sees the shipping clerk at the back of the building and shouts "Hey, Joe, did that Smith shipment get out last night?" This is a request for a report. If Joe shouts back: "Yeah, boss, we got that over on the Smith's receiving dock about 5:30 last night." This is a report. It is something that the boss needs and wants. It makes no difference whether it is verbal.

CHARACTERISTICS OF A USEFUL REPORT

Well, if we want to tie a report into a system, what are the essential characteristics of a report regardless of whether it is printed, verbal, typed or in graph form?

Here are the essential characteristics of a good report:

1. Title or subject. A *clear statement* of what is being reported on.
2. *Timeliness.* Date of report and period covered shouldn't be more than a day or two apart.
3. The *period covered.*
4. Performance *comparison.* Actual vs. planned.
5. *Difference.* How much in or out of tolerance?
6. *Recommendation* or indicated action.

See Figure 2 below for these same items in a typical report layout:

<table>
<tr><td colspan="2">1. TITLE</td><td>2. DATE OF REPORT</td></tr>
<tr><td colspan="2" rowspan="2">4. PERFORMANCE</td><td>3. PERIOD COVERED</td></tr>
<tr><td rowspan="2">5. DIFFERENCE
Plus or minus</td></tr>
<tr><td>ACTUAL</td><td>PLANNED</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td colspan="3">6. RECOMMENDATION OR INDICATED ACTION</td></tr>
</table>

(Figure 2)

If you make every report a systems report . . . . if you make each report a part of your system plan, you will gain many things.

Your report will be *factual.* It will be *timely.* And your present flood of reports will dwindle down to a trickle.

Those that remain will be useful . . . . the kind of reports that tell the man-in-charge what he really wants to know. Then he can really direct the work under his jurisdiction and keep things under control, at the same time that he is getting action in the organization.

For further reading

REPORTS: A PROBLEM IN THE CONTROL FUNCTION OF MANAGEMENT, By Morris Budin, Advanced Management, June 1958.

REPORTING FINANCIAL DATA TO TOP MANAGEMENT, AMA Special Report No. 25, 1957.

ORGANIZING AND ADMINISTERING THE REPORTING FUNCTION, By David Moffit, The Management Review, Feb. 1958.

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The Economic SCENE . . .

by W. Allan Beckett

A Review of Canadian Economic Developments in 1958

As the year 1958 began, business prospects in Canada were anything but encouraging. In the preceding twelve months, the total flow of goods and services as measured by the Gross National Product had increased but slightly and, if allowance is made for increased prices of finished products, output actually declined.

As usual, the commodity-producing sector was the hardest hit with the index of industrial production falling 7% and industrial employment dropping by about 5% during 1957.

Other sensitive indicators mirrored these developments. Stock market prices had undergone their sharpest decline of the post war period, falling by more than 25%. Hours of work in manufacturing in January recorded their lowest level in 15 years and unemployment had jumped to levels not witnessed since 1939.

The major factors contributing to the 1957-1958 recession (see The Economic Scene, March and July-August 1958) were declines in inventory investment and in business spending for new plant and equipment.

In reviewing the outlook for 1958, this column (March 1958) predicted a third quarter revival and confirmed this diagnosis at mid-year. Fortunately for both of us, this has come to pass. It was predicted that the continuing elements of strength would be housing, consumer and government expenditures; inventory investment would contribute more strength in the last six months. Business spending for new plant and equipment would continue to act as a depressant.

As the year unfolded, the pattern of these developments became clearer. Housing starts, aided by additional federal action, reached a new high in the first six months. This has ensured a substantial volume of work put in place through the year end. New starts began to retreat during the last six months—a development that should be watched as we move into 1959.

Government expenditures, after a slow first quarter, rebounded sharply by mid-year and have continued to rise. Consumer expenditures, especially for non-durable goods and services, maintained a healthy level in the first half of 1958 and renewed interest in durable goods has carried personal spending into higher ground as the year draws to a close.

The period of the lowest levels of production and employment was the first quarter of 1958 and these were associated with the sharp drawing down of business inventories. As the extent to which business "sold from the shelf" showed through the year, production and employment began to revive.

This recovery pattern was interrupted by labour strikes in the period August through October, and a further liquidation of business stocks was accompanied by sluggishness in production and employment.

In the last two months of the year, the disappearance of these special factors saw the resumption of normal recovery. While official data are not yet available, it seems likely that the replenishment of stocks depleted by recession will boost industrial production and total output in the final quarter. The recovery to date has already been of the order of 3% (February to August) and December will undoubtedly post new highs for the year for most measures of business performance.

Business spending for new plant, machinery and equipment continued to decline through the year. The sharpest drops occurred in the early part of 1958 coincident with the low point in general business activity. The declines slowed toward a more stable level by the year end and, while it is too early to predict any renewed expansion in this vital area of demand, the prospects for new fixed capital formation will require careful study in assessing the outlook for 1959.

As is customary, much of the impact of Canadian recessionary influences was felt by foreign suppliers rather than domestic producers. In sympathy with the declines in inventories and in business spending for machinery and equipment, our imports of goods from abroad retreated sharply, about 20% from early 1957 levels, compared to the decline of 7% in domestic industrial output. At the same time, Canadian exports, in part supported by special factors, resisted depressing influences through to September 1958. As a result, the deficit on foreign account, which represents the extent to which we borrow from other countries, shrank substantially from $1.5 billion in late 1956 to $.7 billion by mid-1958. Trends in foreign trade, and in particular world demand for Canada's basic materials, constitute another important variable in the business situation next year.

Thus, as we face 1959, business prospects appear much brighter. A year ago we were headed for the lowest point of our most severe post-war recession. Today, we are several months along the path of renewed expansion.

Next month, this column will review the outlook for the Canadian economy in 1959 and attempt to analyze the probable impact of the new elements of strength that have appeared.

PERSONALS

J. M. C. HALL, R.I.A., has been appointed Comptroller of C. A. Pitts General Contractor Ltd., Dorval, Quebec. Mr. Hall was formerly Field Office Manager with this company in Prescott, Ontario.

THOMAS F. H. MEAKIN, R.I.A., has been elected Assistant Treasurer of Purolator Products (Canada) Limited, Toronto.

WALTER COWAN of the Toronto Chapter has been appointed Office Manager of his company, Purolator Products (Canada) Limited.

S. L. HEATON, R.I.A., was a prize winner in the recent examinations of the Canadian Association of Purchasing Agents when he obtained the highest standing in Ontario and the second highest standing in Canada. Mr. Heaton is Purchasing Agent of B. Greening Wire Co. Ltd., Hamilton.

ONE APPROACH TO IDP INVOLVING ORDER AND INVOICE PROCESSING — A Case Study *

By E. J. Winters,
Secretary-Treasurer,
Canadian Cottons, Limited,
Cornwall, Ontario.

To speed up and give greater accuracy to its order processing and invoicing system, this textile manufacturing company investigated the possibility of installing an integrated data processing system in answer to the many problems of processing inherent in the industry. In this study, the steps leading up to and the actual punched tape installation itself are described, as well as the results obtained by the company, one of the first Canadian companies to use this type of system.

CANADIAN COTTONS, LIMITED, are spinners, weavers and converters of a wide variety of cotton and blended cloths such as awnings, tickings, flannel and flannelettes, interlining, denims, drills, shirtings, diapers, blankets and various types of yarns. We employ approximately 3000 employees, our mills being concentrated in two Ontario cities, Cornwall and Hamilton, with a weaving mill at Almonte, Ontario, and a spinning mill in Saint John, New Brunswick. Our head office is situated in Montreal, Quebec.

The textile industry in Canada has been industriously seeking better methods to reduce cost and improve quality to offset the effect of the general textile recession throughout the United States and Canada during past years.

Modernization, cost cutting and quality improvement have not only been carried out in the mills but in the offices as well. As with many other companies, the constantly increasing cost of clerical operations as well as today's demand for fast communications and more accurate statistics for timely management decisions are major concerns. While the company had pursued a policy of using modern equipment for many office operations, such as payroll and stores accounting, up until 1953, sales statistics were processed manually. In that year, threatened with considerable staff increase due to additional information requirements, punch card equipment was installed, resulting in considerable savings at that time. It is important to note that, as a policy, beginning with that first step, every move we have made toward mechanization has had to pay for itself, as a minimum. There is no place in the Canadian textile industry for expensive, glittering toys. All steps taken must be done so at no additional net cost, the gains of speed and greater accuracy being the bonus benefits.

The original tabulating installation having proved highly satisfactory, a base of confidence was established to carry us into the succeeding steps.

*An address to the Cornwall Chapter of the Society of Industrial and Cost Accountants given in September 1958.

INVESTIGATING COMMITTEE FORMED

Early in 1955, an investigation of the order processing and invoicing system then in use was considered advisable. The investigation was not primarily concerned with cost but rather with accuracy and speed-up of orders to production departments so that deliveries could be expedited.

It must be remembered that in the Canadian cotton textile industry, there is not only the problem of a large variety of products from any particular mill; styles, broken into patterns within style, but this is amplified by the fact that there are other than first quality goods being sold, such as seconds, a variety of substandards and short-length pieces and remnants. If an order, when written, is not absolutely clear, it is very easy for a shipper to make errors of interpretation in connection with quality, colour, size, date of delivery, etc., as many of the orders received cover various products for various deliveries in the future.

As we do not have a procedure department, in order to tackle this problem a committee was formed consisting of the plant office manager at Cornwall, the plant office manager at Hamilton, the tabulating supervisor and myself. This gave us a task force of men whose pooled knowledge and experience would give us a good cross-section of the areas involved in the study. In addition, the two plant office managers had formerly been members of the procedure department which we had had in the years 1950 to 1952.

All the members of the committee undertook the duties of the survey in addition to their numerous line responsibilities.

As our invoicing is done at mill locations and as, naturally, the shipping is also done at these locations, these men were invaluable in the studies which we subsequently made.

The committee made a very careful study of all the systems and equipment of which we could learn anything. We spent time independently visiting exhibitions of office equipment, talking to representatives of office equipment manufacturers, reading anything we could find, in order to build up as much background knowledge as possible.

We decided that the first essential that was required was a complete analysis of the systems then in force, laying out such systems in complete detail. The services of a form suppliers were enlisted, who provided their Analysis Survey Service to prepare a detailed flow-chart of the existing operations.

Before proceeding with the survey, the purpose was explained to every person involved. The study necessitated primarily a conscientious, painstaking fact-finding operation to discover exactly what was going on in the clerical operation as it then existed. The flow of paper work was observed and checked, from the receipt of an order to final completion throughout the many and varied departments and sections.

EMPLOYEE PREPARATION

The pre-study explanation to company employees perhaps merits some comment at this point. This explanation took different forms to different echelons of the company. Naturally senior members of sales and production departments were advised in most general terms of the intended study, as it was not known exactly what areas

our pursuit might eventually cover. However, the goals that the committee had set were outlined as follows:

Greater speed and accuracy in acknowledging orders to customers.
In sending orders to mills and in shipping goods to customers.
Invoicing shipments to customers by pattern.
Analyses of shipments by pattern.
Analyses of order confirmations by pattern.

The significance of the words "by pattern" in these objectives, is that, prior to this time, invoicing of goods was made on a style basis resulting in the situation of multiple shipments where our customers did not have a record of what patterns had been shipped on any order, having only been invoiced by style.

The advice to employees in the work areas involved consisted of a short course and movie on work simplifications, together with short talks by responsible department heads signifying:

FIRST, that no individual criticism was to be inferred by the employee when the analyst started asking questions. We were only interested in finding out exactly how we did things at the moment.

SECOND, reduction of work staff was not a major goal. We did not intend to reduce staff merely to make the remainder work harder.

THIRD, if there was any better or easier way of doing the work, we would like to find it, thereby making the staff's jobs more attractive to them by reduction of drudgery and sometimes, criticism. We frankly admitted to them that no person knows the details of a job as well as the person doing it, and tried to enlist their ideas and support in finding better answers, whatever they might be.

The response from the staff was quietly encouraging. Certainly judgment was reserved but it is quite understandable that surging enthusiasm would not be evident at this stage. However, no active antagonism was evident and certain of the key personnel were quick to pledge their support to the program.

Analysts quietly went to work interviewing the staff and in a very short time were able to report back with a flow-chart of the work as it had been presented to them. They then checked back this chart in detail with each of the staff concerned, making corrections for misunderstandings and evolving a final flow-chart of the work as it was then performed.

PREVIOUS SYSTEM OF ORDER PROCESSING

In the cotton textile industry, orders may be taken not only for various patterns and qualities within styles, but also for various delivery dates ranging from immediate to 12 months in the future.

As order deliveries may therefore be accepted for goods in warehouse, goods at present in process or for goods not yet started through process, all incoming orders must be scrutinized by what is known as an Availability Department, where the order is checked and accepted against stock or production plan, depending on the delivery date. In Canadian Cottons, Limited, all order-checking and acceptance is done in head office in Montreal, and Availability Department is considered a part of order-processing.

Under the system then in use, the salesman's order was checked for price and availability, and if accepted, a ditto set was typed at head office. Copies of this set were

sent as order confirmation to the customer and salesman, and the master mailed each night to mill location. The following morning, on receipt of the master, the mill ran off their copies for invoicing, production, shipping, etc., the shipping department receiving their copy at noon, or later, on the day following processing at head office. In cases of rush urgent delivery, of which we have many, this was highly unsatisfactory, as delivery could not possibly be made before another day.

Invoicing was also performed from the order masters, using variable masters, but our method of calculating invoices was cumbersome.

To complete the picture of the system then in use, two teletype circuits linked head office with the mills. One circuit gave communication between Montreal and Cornwall, 75 miles away. The other circuit gave communication between Montreal and the mills at Hamilton plus the sales office at Toronto, approximately 350 miles apart. These circuits were used entirely for message traffic.

FLAWS REVEALED BY FLOW-CHART STUDY

On studying the flow-chart produced by the analysts which set out in graphic form the system then in use, it became quite apparent to the committee that, in certain areas, improvements could be made even without integration.

When a rush urgent order was received by Toronto office, it was the custom to send a rush urgent teletype message to head office asking that the mill be notified immediately of the order which probably would be received at head office within a few days. Head office then sent a rush urgent teletype message to the mill to the same effect. Often the salesman, after sending the rush message, would forget to write out the order, necessitating involved follow-ups both at head office and the mill.

Obviously, there was considerable duplication of paper work involved in this situation. It was found that orders were being written by the salesmen in a somewhat haphazard fashion. It was not unusual to receive orders of this nature, "10,000 yards of product A divided between patterns A, B, C, D, E and F to be delivered April 1st. May 1st and June 1st". While this was a very easy way for the salesman to write up the order, it necessitated considerable calculation in the Availability Department, such calculations having to be made over again when the order was received in the shipping department at the mill.

The flow-chart revealed other repetitive copying operations which led the committee to investigate the possibilities of converting to an integrated data processing system. The principles of work simplification were then applied to each operation in turn, to find out exactly how it stood in relation to the whole process of paper work within the company. Could it be eliminated without harm to the flow, could it be combined with some other function, was it a case of changing the sequence of the functions themselves or a mere simplification? Each idea that evolved during the fact finding was brought boldly out into the light of day, and looked at hard.

PRELIMINARY COMMITTEE AND TEST WORK

Then, when the study was completed, every idea that had been born of the observation was pooled in readiness for the next step, an important step—the development of suggestions for improvement of the company's clerical operations based on the combined ideas of experts and company executives. Improved operating methods

were tested, ranging from paper and pencil to the most advanced business machines, until we were satisfied that the best individual and overall answers had been devised.

This was a most difficult and trying time as the committee had many ideas and sometimes conflicting opinions. However, it is a matter of great pride to me that every decision made finally by the committee was unanimous. Where there were conflicting views, the issue was discussed at great length until a majority opinion became evident, and the dissenters agreed to go along with the majority.

In the beginning, each member of the committee had an absolutely open mind as to what the ultimate answers might be. On every individual step, as many solutions as could be thought up were listed down. In some cases, as many as eight possible solutions were discussed. In discussion, certain items were eliminated for one reason or another until, finally, the one best solution became evident. As we worked our way through this maze of details, the idea of integration of operations became more and more attractive. There was one great difficulty which we had at that time and which is today not quite as serious. Machinery had not yet improved to the point at which it is today and there were very few installations using punched tape, with or without teletype application, which had a performance record. In fact, it was difficult to find any machines in operation.

Certainly, in Canada, there was very little for us to see beyond an installation which Canadian Pacific Railways were using which, while very large in volume, was comparatively limited in scope.

However, using the information which we had been able to procure, a system was devised, utilizing on-and-off line teletype equipment and five-channel chadless paper tape. Punched information in the tape would be interpreted into typed characters on the tape, resulting in easily-read tapes.

Systems analysts, interpreting the committee's decisions, prepared a flow-chart showing in graphic detail the system which the committee believed would answer the particular problems of Canadian Cottons, Limited. At this point, the facilities of the Canadian Pacific Teletype workshop were used for testing the contemplated equipment on the job to make absolutely certain the new ideas were practical.

C.N., C.P. Teletype equipment, off-line as well as on-line, was used as order and invoice-typing machines, chiefly for the following reasons: no capital outlay was required as these machines could be obtained on monthly rental basis, maintenance service was available at all locations and certain automatic programming features were developed which were exclusive to this equipment, and in fact, exclusive to our system at that time.

Now came the forms, the working papers and cards that carry the information from one section to another. Complexities in these can lead to all kinds of hold-ups in the physical operation of any department of any business and a simplification must often mean readjustment or redesigning. They must be tested by the age-old method of trial and error, operated in the recommended machines and combined with all the ideas that came out of the initial study. Combinations were tried, rejected, tried again in other ways, until finally the right combination of forms and machines was arrived at.

This is a long process, a hard and often worrisome process, and involves the co-

operation of every supervisor, the analyst, the committee and the representatives of the machine companies.

At this stage the team made its recommendation to management of the proposed system. Further suggestions were welcomed and, indeed, were forthcoming at this time.

THE PROPOSED SYSTEM

Here then is the system as it was presented to Canadian Cottons' management.

It was the feeling of the committee that a single automatic transmission teletype circuit system could handle all of the company's message traffic, plus sending orders and receiving invoice information to and from the mills. In other words, by changing from open-line typing to having all data first inserted on a punched tape, the potential of 75 words a minute line speed could be used, and one line could thereby handle all the traffic.

Outgoing teletype messages are punched into tape on the perforator and the tape is, at the first opportunity, placed on the line equipment for transmission.

Each order is handwritten in the district sales office on a specially designed salesman order form. The old form was redesigned so as to make it necessary for the salesman to break down the order into specific detailed products and delivery dates for each, which speeded up the flow of orders through the checking procedures in head office, as comparatively little interpretation is now required. The layout of the form was such that the information was in proper sequence for later typing of the formal order confirmation. The order forms are forwarded to head office where they are checked for pricing, and credit ratings. The sales offices have been provided with pre-calculated tables indicating net price in decimals for any list price and any discount percentage. The stress on decimals is made here because formerly many prices were shown in fractions of cents, such as 7/8, which naturally were not applicable to tabulating cards and, in any event, had to be converted to decimals for invoice calculations.

The orders are then checked through the Availability Department and, if in order, forwarded to the order-writing clerk. The stress at all times in this system, is to speed the orders to the mill, certain orders, such as rush urgent having, naturally, high priority. We feel that on a normal day, all orders received until three o'clock in the afternoon should be at the mill before five p.m.

In the order-writing department we have two files of constant tapes. The first file is of customers' tapes, a permanent tape being filed for each customer containing all the fixed information (name, address, customer code, sales tax exemption number if any, etc.) These tapes, approximately 1500 of them, are filed alphabetically in a vertical visible file, an average tape being 2½ to 3 feet in length.

The second file is a product tape file, an average tape being 8 to 12 inches in length. We found that formerly there had been some misinterpretation of product because of nomenclature. We established one formal description of every product which is now contained on these tapes together with the product code, product representing, in this case, style of which there are approximately 350. There are also included in both these tapes, certain machine instruction codes, to which I will refer later.

Salesmen's orders are processed in batches of approximately 25. The first step is to draw the customer tape and product tape pertaining to the first order of the batch.

These tapes are fed through a teletype reproducing machine which duplicates the constant tape. This is done for each order in the batch of 25, resulting in one long, continuous master tape for the batch, containing customers' fixed information and product information plus certain machine instruction codes. As each individual tape has been run through the reproducing machine, it is promptly returned to the proper file, thereby keeping files and work areas entirely clear and virtually eliminating the possibility of misfiling tape. The purpose of this long, continuous master tape is to speed up the operation following, which is order-writing. By having one continuous master tape, it is necessary only to insert the tape in the off-line equipment once for every 25 orders rather than 50 times, if the original individual constant tapes were used for this purpose. When this idea was inaugurated, we estimated that the order-typist production was increased by about 40%.

The batch of orders with the continuous master tape now goes to the order-typist. This girl works on an off-line teletype machine which can read tape and make tape as well as page copy.

The operator inserts her master tape in the reading unit of the machine and the machine types, automatically at 75 words a minute, the constant information contained in the tape. By means of a special character code, which has been placed in predetermined positions in both customer and product tapes, the machine will stop at points where variable information is typed, which the operator inserts manually. At the end of one order, the machine automatically spaces on to the next continuous form and types the constant information on it, usually doing this while the operator is turning over the last order completed.

In addition to the page copy, this machine makes a further tape on a typing reperforator which contains all the information on the order.

Upon completion of the batch of orders, the page copy is visually checked for errors. If error free, the reel of tape is at the first opportunity placed on the on-line teletype equipment for transmission to the mill involved.

Teletype station selection is made in the following manner. Each station has an individual call letter. By inserting the call letter of the station being called in the beginning of the message tape and depressing the call key on the teletype, the proper station is automatically called in as soon as the line is free.

As mentioned before, one teletype circuit is used for all message traffic plus order sending. Since it is undesirable to shut out message traffic for any considerable length of time, only one batch of orders is sent to a mill at any one time. After transmission of a batch of orders, the teletype line is thrown open for message traffic until all messages have been cleared, at which time another batch of orders is transmitted. A batch takes approximately 20 to 30 minutes for transmission, so that message traffic is never delayed for more than half an hour at a time.

At this point, the data handling might be said to become completely automatic. When the orders are being transmitted to the mill, page copies are being typed automatically at 75 words per minute on the sending machine at head office. These copies are the customer's confirmation and the salesman's copy. The previously typed copy, known as a proof copy, is used as a numerical file copy at head office.

Adjacent to the sending machine, a tape-to-card converter is located. As order tape

emerges from the sending machine, it is fed through the converter, producing punched tabulating cards for orders confirmed.

These tabulating cards, however, contain only selected information from the orders, which will be used for analysis and other purposes.

Selectivity of the tape-to-card machine, to produce only portions of information on the order, is governed by control characters within the tape. These characters were originated from the constant customer and product tapes discussed earlier. The degree of accuracy of these tabulating cards is such that no verify punching is required. Naturally, control balancing procedure is followed. It is probably evident that, because of the use of constant tapes embodying customer and product codes, accuracy of these items is exteremely high.

Simultaneously at the mill, copies of the order are received in the shipping department on a teletype receiver, giving them the shipping department copy and production control follow-up copies. The mill accounting department receives a typed copy of the order also by teletype, which will be used as the invoicing department copy. The mill accounting department teletype also has a typing reperforator attachment which gives them simultaneously a tape containing all fixed information on the order. This will be used as a constant tape for writing the invoice. The tape is cut and filed with the orders, a simple slot arrangement on their copy of the order providing a place to store the tape with the order.

These tapes are approximately 2½ to 3 feet in length and by simple folding, are easily placed in slots.

When shipment of whole or part orders is made, calculation of invoice value is made manually from advices received from the shipping department. This information is entered on the copy of the order in spaces provided. As you will see, provision has been made allowing for part shipments up to four shipments. If further shipments are made against the same order, a second form is attached. The forms with invoice calculation information are then forwarded to the invoice-writing clerk.

The invoice-writing clerk has now all the information necessary to write the invoice quickly, easily and accurately. Inserted in the slots is the constant tape and, written manually in the body of the order, is the detailed variable information.

Equipment used at this point is off-line teletype identical with the equipment used in the writing procedure described earlier.

The typist removes the constant tape from the order and inserts it in the gate of the tape-reading attachment of her equipment. The machine then, automatically at 75 words per minute, types such constant information on the invoice page copy, stopping automatically at points where variable information is to be inserted manually. Again as in order-writing, the machine on signal will automatically space correctly between finishing one invoice and beginning another.

By utilizing the time when the machine is typing automatically to file the previously used tape and select the next tape, a high degree of operator efficiency is attained. Such page copies of invoices are visually checked for accuracy.

At the time of typing the page copy, the machine produces a tape of condensed information contained on the invoice which will be transmitted to head office by a teletype to originate tabulating cards.

Condensation of information at this point is indicated, as much of it is not necessary

for sales analysis purposes. For instance, having the customer code, it is not necessary to punch customer's name, address, etc. Similarly having product code, it is not necessary to punch product description. It is important to know that the tape is reduced by two-thirds as a result of condensation, thereby reducing the line time requirement when transmitting this information to head office.

At the end of the day, this tape is transmitted via on-line teletype to head office, where the tape is duplicated and run through the tape-to-card converter, thereby originating tabulating cards simultaneously as transmission is continuing from the mill.

DISADVANTAGES OF THE SYSTEM

Now that this installation has been operating for a year and a half, at what conclusions have we arrived?

First, are there any negative conclusions? Were there any unforeseen difficulties of a major nature? Did equipment not measure up to expectations?

As we had drastically changed the forms, Order Confirmation and Invoices going to the customers, there were some who were confused.

There are some dangers in funnelling all the work-flow through one mechanical system. Heavy ice and snow storms and electrical disturbances sometimes make the teletype system jittery. While these conditions do not prevail for periods of great length, they can create serious problems when volume of traffic is heavy every hour of every day.

Apart from storm difficulties, inaccuracies of transmission line equipment have not been a problem to us. Since installation, we know of only one case where there was a difference between page copy at one station and page copy at another station. In this case, transmission of an order for 5000 items was received as 500 items.

That, of course, applies only to transmission errors. There can be errors through bad tape-handling, splicing, etc., but these can be attributed to human failure and, after proper staff training, can be reduced to a small factor. Various lessons have to be learned about tape-handling and storage and equipment. Such things as inadequate or fluctuating power source can render teletype equipment highly inaccurate.

Great care must be taken in training the staff or considerable difficulty can be experienced. The staff must somehow absorb the idea of production line work or one clerk can hold up the whole operation. Even with senior, mature people, the idea of keeping their machine producing at all times is sometimes hard to grasp. The person who is in the habit of letting her machine stand idle while she crosses the floor to check with her supervisor, or conducts a long telephone conversation, not unusual office practices, has to be given intensive instruction, particularly if her machine is the only one of its kind in the system and thereby becomes a bottleneck.

ADVANTAGES OF THE SYSTEM

And on the positive side—

We feel that we achieved all of the original goals outlined—

We acknowledge orders to customers and get the orders to the mills faster and more accurately. The great majority of the orders received at head office in any day are confirmed and the order is in the mill shipping areas the same day. By re-design of the salesman's order form, by use of product tapes whereby the designation and

product code are 100% accurate, we have improved accuracy of shipments and sales statistics.

We now invoice goods to customers by pattern thereby giving the customer better records and giving ourselves analyses of sales by pattern which would have been most expensive under the old system.

We also have, as a by-product, analyses of orders booked by pattern, previously an expense for only partial results.

We have also saved some money. The original estimate of savings has been surpassed by actual performance.

There is other experience which we have gained. We find that paper tape will work satisfactorily. As tape is a common input to new tabulating equipment, we were able to plan further steps now in progress based on the confidence gained.

We find that staff, while somewhat harder to find and train, are proud of their positions and display more enthusiasm. Of course, some of the jobs were up-graded, in some cases with job titles representing their responsibility.

In closing, there is one other thing that we have learned. That is, that basically, all of this operation, planning and installation, is something that a company must do for itself. While outside people of great competence—equipment, communications, forms representatives—can give great assistance, this sort of project must be carried by company people. Only they can take the responsibilities and make decisions.

And there must be the right organization in the company to do it. The right climate must be engendered by top management. The proper individuals must form the committee, particularly if their line duties continue during the survey, planning and installation. This is slow, detailed work, often discouraging and frustrating. It takes persevering and competent individuals who command respect from their associates to carry the project through and avoid miring down in the myriad bogs of technical and personality problems which have to be met.

We, at Canadian Cottons, Limited, are very happy with this installation which we feel not only accomplished its original purposes but opened the doors to greater utilization of equipment for office work, and made possible further steps which we have taken, or are now taking, and which probably would not have been possible otherwise.

For further reading

INTEGRATED DATA PROCESSING, Panel Discussion Cost and Management, Jan. 1957.

A REVIEW OF INTEGRATED DATA PROCESSING EQUIPMENT, by H. S. Brown, Canadian Chartered Accountant, Nov. 1956.

THE ROLE OF COMMUNICATIONS IN INTEGRATED DATA PROCESSING, by T. E. Munford, Canadian Chartered Accountant, June 1957.

PAYNE, PATTON & PUGSLEY

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Books in Review . . .

BASIC MOTION TIMESTUDY

WORK STUDY IN THE OFFICE

By Harry P. Cemach, Published by Current Affairs Ltd., 319 High Holborn, London, W.C. 1, England, 1958. pp. 166. Price 25s.

Reviewed by: L. W. O'Donnell, R.I.A.

This small book is another volume of pertinent information for the office methods supervisor. While it does not go into detailed instructions, it does arrange logically the principles underlying work study in the office.

The contents of the 26 chapters and four appendices of the book are the outcome of rearranging the materials used in a special course held at Enfield Technical College in England, but most of the steps indicated for the investigation, recording and measurement of the clerical task are equally applicable in Canada. With the task measured, the capacity and efficiency of the office organization can be known—the supervisor will have a standard for comparison and control. This control, the author points out, will be evidenced by reduced overtime, a more level work-load and on-time reports, thus creating staff satisfaction which, in turn, attracts and holds desirable staff.

The integration of the four stages, how, when, where and who, directs the methods-study man to the best available method, whether for a large volume operation or the one-person task.

While automation is reducing the significance of the time-study man in the factory, the entry of modern data processing into the office will make heavy demands on the office methods department for group studies of office work loads.

Chapter 14, on "Simple Timing and Averaging", could have been expanded profitably to illustrate actual time measuring of various office tasks with examples. Since scientific and continuous measurement of office work loads is practically non-existent, this facet needs the encouragement of techniques that are practical.

In Chapter 15, work sampling, a fact-finding statistical tool based on the laws of probability, is investigated and an example worked out. While the author is not too much in favour of placing this technique in the hands of other than the statistician, he does admit it can frame for management a clear picture of how the office staff spends its time.

The string diagram on page 51, the alternate-sheet method on page 102, and the suggested elimination of "know-how" in clerical tasks on page 114, give some indication of the aids the supervisor of office methods will meet in the pages of this book.

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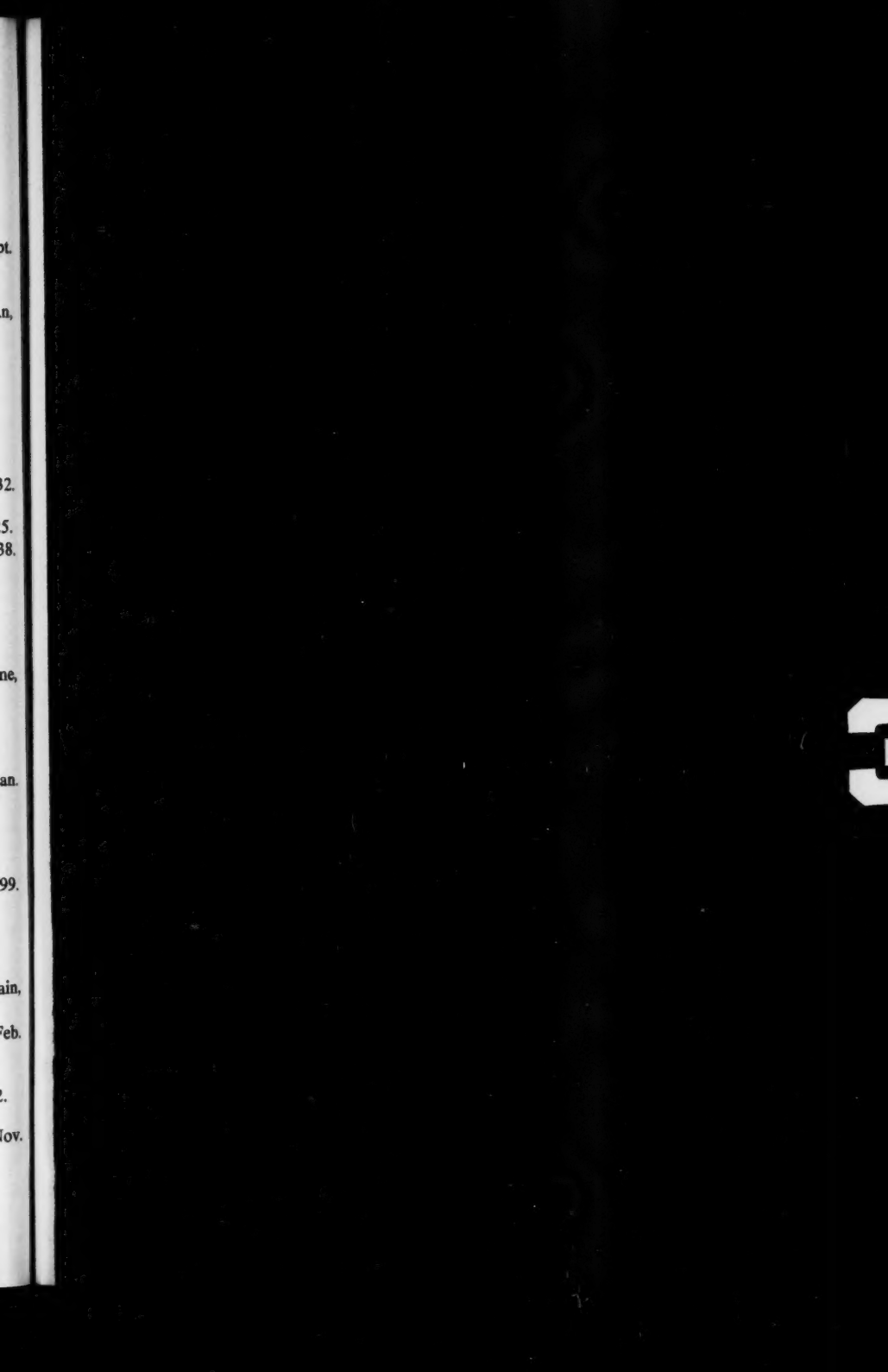
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